RECURRENCE OF *ATTA* COLONIES AT A CANAL ZONE SITE (HYMENOPTERA: FORMICIDAE)[1]

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ABSTRACT: Incipient colonies of the common leaf-cutting and fungus-growing ant, *Atta colombica tonsipes* Santschi, have been taken repeatedly under and beside the same *Terminalia* tree in the Panama Canal Zone. In a square of 15.24 meters on a side 70 colonies were mapped in 1971, 118 in 1973 and in 1976 eight of many similar colonies were removed for study. One of the 1971 survived in the laboratory five years. The living weights of six queens averaged 172.1 mg; soldiers of 10 mm length weighed 26.85 to 35.32 mg; workers of 1.5 to 9 mm weighed 0.53 to 20.98 mg. Three colonies developed maximum gardens in their first year from 20 to 2100 estimated milliliters. One 1971 colony used a monthly minimum of 2 to 35 g fresh leaves in 1971, 23 to 155 g in 1972, 32 to 640 g in 1973 and 25 to 58 g in 1974 with yearly totals of 85 to 2515 g. Corresponding monthly garden sizes were 2.5-300 ml (1971), 220-1000 ml (1972), 200-4100 ml (1973) and 250-1600 ml (1974).

DESCRIPTORS: Formicidae, fungus-growing, leaf-cutting, garden growth rate, living ant weight, repeated nesting.

The common *Atta* of the Panama Canal is *Atta colombica tonsipes* Santschi (Weber 1969, 1972a), distributed across the Isthmus. A site under and beside a *Terminalia muricata* tree (Combretaceae) was mapped with the assistance of Jean Weber on 5 August 1971 for new colonies from a probable May or June nuptial flight. In a square of 15.24 m on a side (50 ft) the location of 70 independent colonies was shown on a map (Weber, 1972b), not including an estimated 10-15% being missed. Fourteen were removed to my U.S. laboratory of which one remains alive in Florida in August 1976.

The tree was revisited on 21 August 1973 and a similar square outlined by Peter Weber. The census revealed 118 young nests of two or three months of age of which six were collected. They were in the same stage of development as in 1971, having fungus gardens of an estimated 30-65 ml at depths in the soil of 5-8 cm. Noteworthy was the absence of any colonies originating in 1971, which in 1973 would have had multiple crater nests of several meters in diameter and with well-developed trails many meters in length. The area is one sprayed with insecticides.

The exact site was examined 12 July 1976 with a party consisting of C. Jerry Wallace, Carl Hiner, Claire and David Ehrlinger and Burton Weiss, for living colonies to take to the Cincinnati Zoo and Drexel University (Weiss).

Eight young colonies of ages comparable to those of 1971 and 1973 were removed. Others were doubtless present in long grass. However, there was one much larger colony that may have dated from one seen here in 1973 or possibly from a later nuptial flight. It was nearly 2 m in diameter and had trails of many meters leading off the site.

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Weights in Life of the Ants

The queen. Four from the 1971 colonies weighed 148.8, 149.4, 182.6 and 192.3 mg., respectively; two from 1973 were 151.0 and 208.5 mg. The average of the 6 was 172.1 mg.

The workers. The soldier sub-caste in mature colonies in nature weigh 60-80 mg; smaller ones of 10 mm length in a 1½ year colony weighed 26.85-35.32 mg. Workers of 7-9 mm weighed 8.03-20.98, those of 4-6 mm were 3.05-7.69 mg and the smallest of 1.5-3 mm weighed 0.53-2.22 mg.

Growth of the Colonies and Their Gardens

Growth in the Swarthmore laboratory of the colonies and their gardens was measured as in Weber 1976 a and b, but for shorter periods. The fresh green leaves used as substrate were the same. Three colonies of similar age taken a few km from the *Terminalia* tree in 1966 had the following growth of gardens in estimated milliliters for their first full year:

Col. A. 120-650 ml; Col. B. 20-800 ml; Col. C. 20-2100 ml.

This great disparity in growth was duplicated by colonies of other *Atta* species. A *tonsipes* garden of 1650 ml weighed 177 g with ants, the latter probably weighing less than 20 g and consisting of about 8000 individuals.

One colony of the *Terminalia* site of 1971 showed the following monthly growth of gardens:

	Substrate use in grams		Total for year	Garden Size Estimated in Milliliters	
Year	Minimum	Maximum		Minimum	Maximum
1971	2	35	85	2.5	300
1972	23	155	841	220	1000
1973	32	640	2515	200	4100
1974	25	58	177	250	1600
1975	Not measured		–	500	1500

The garden size fluctuated in January-July 1976 from 330 to 1020 ml.

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